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ABSTRACT

This study used LOGO II, an instrument designed to assess students' learning and grade orientations, with a freshman class and again 4 to 5 years later when the same students (N=174) were seniors at the University of Montevallo (Alabama). To determine if there were differential effects for different majors, the data were disaggregated by major. Results of the study indicated no increase in learning orientation over the college years. For grade orientation there was no significant interaction between major studied and class level. Although LOGO II did not show an increase in learning orientation from freshman to senior year for this sample, it did identify differences in learning orientation for different majors, suggesting that students may self-select into majors that reflect their own attitudes toward learning. The grade orientation scale revealed an interaction between major area and changes in grade orientation, with students in some majors showing substantial increases in grade orientation and those in other majors showing decreases or staying the same. Contains 24 references. (GLR)

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LEARNING AND GRADE ORIENTATION OF COLLEGE STUDENTS

A LONGITUDINAL STUDY

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ABSTRACT

LOGO II, an instrument designed to assess students' learning and grade orientations, was administered to a freshman class, and again 4 to 5 years later when the same students were seniors, as a potential measure of change in attitudes and behaviors related to lifelong learning. Learning orientation did not increase over the college years, but significant differences in learning orientation scores for different major suggest that students with different levels of learning orientation may gravitate toward different majors. Grade orientation increased significantly overall, but there were also marked differences among majors, suggesting that some majors may encourage students to become more grade conscious.

LEARNING AND GRADE ORIENTATION OF COLLEGE STUDENTS

A LONGITUDINAL STUDY

There has been a strong interest in measuring institutional effectiveness in higher education in the past decade, with particular emphasis on assessing student outcomes. Many authorities maintain that a "value added" approach should be used in assessing outcomes (Ewell, 1985; Jacobi, Astin, & Ayala, 1987; Northeast Missouri State University, 1984), meaning that measures of student achievement should provide evidence of change in scores from freshman to senior years.

The existing nationally standardized instruments for assessing general education outcomes do not deal with some of the common goals of a general education program, such as the development of a desire for and an inclination toward lifelong learning. Colleges must look to other measurement tools and strategies to investigate attainment of these goals. LOGO II, an instrument developed by Eison, Pollio, and Milton (1982), measures students' attitudes toward learning and grades. LOGO II yields separate scores for Learning Orientation (LO) and Grade Orientation (GO). High LO scores are suggestive of the habits and attitudes associated with lifelong learning, whereas high GO scores suggest learning primarily for the sake of externally awarded grades. Students can be high on both LO and GO, low on both LO and GO, or high on one scale and low on the other (Eison et al., 1982; Eison, 1982). Although originally conceived as a measure of learning styles of students, the questions are also suggestive of attitudes and habits related to lifelong learning and thus have promise as a measure of that aspect of general education.

One of the primary difficulties in using any outcomes information is the difficulty in establishing cause and effect relationships with what are essentially correlational data. Findings of "no effect," which often happen in outcomes research, may be due to different effects on different subgroups. Even when gains are shown, they may be hiding differential effects on students of different race, sex, and major, as well as those with different abilities, learning styles, habits, and ambitions, for example (Ewell, 1988). One recommendation to help clarify this problem is to disaggregate the data. This involves using data collection and analysis techniques that "permit analysis of the differential effects of college experiences on particular subgroups of students and on students with a variety of learning styles and personality types" (Banta, 1988, pp. 97-98).

The present study investigates longitudinal changes in learning and grade orientation from freshman to senior year as possible indicators of students' changing attitudes toward lifelong learning. To see if there are differential effects for different majors, the data are disaggregated by major.

Previous Research with LOGO II

The LOGO II scale contains statements concerning attitudes and behaviors associated with learning and grade orientations. Students are asked to indicate on a scale of 1-5 their disagreement/agreement with the statements assessing attitudes, and on a scale of 1-5 (never/always) the frequency of their learning and grade orientation behaviors. Following are typical statements from LOGO II of **learning-oriented** attitudes and behaviors:

I enjoy classes in which the instructor attempts to relate material to concerns beyond the classroom.

I get annoyed when lectures or class presentations are only rehashes of easy reading assignments.

I discuss interesting material that I've learned in class with my friends or family.

I participate in out-of-class activities even when extra-credit is not given.

Following are sample statements of **grade-oriented** attitudes and behaviors:

I think it is unfair to test students on material not covered in class lectures and discussions, even if it is in reading assignments.

Written assignments (i.e., homework, projects, etc.) that are not graded are a waste of a student's time.

I get irritated by students who ask questions that go beyond what we need to know for exams.

When looking at a syllabus on the first day of class, I turn to the section on tests and grades first.

Psychometric characteristics of LOGO II were reported by Eison and his colleagues (Eison et al., 1982). Reliability estimates, using Cronbach's coefficient alpha, were reported as .76 for the LO scale and .73 for the GO scale. Inter-item correlation matrices also tended to substantiate LO and GO as independent scales with internal consistency.

A variety of studies have examined the relationship of LOGO II scores to learning styles, study habits, and personality types, as well as various other educational, sociological, and interest variables (Eison, 1981; Eison, 1982; Eison & Pollio, 1985; Eison, Pollio, & Milton, 1986; Milton, Pollio, & Eison, 1986; Eison, undated; Rogers & Palmer, 1987;

Rogers, Palmer, & Bolen, 1988; Bolen & Rogers, 1988; Rogers, Bolen, & Palmer, 1988). These studies show support for the constructs of learning and grade orientation. Harris and Couch (1989) also present evidence of construct validity for LOGO II.

Preliminary studies to the present longitudinal study with LOGO II were conducted at University of Montevallo, a small, publicly supported liberal arts university (Rogers & Palmer, 1987; Rogers, Palmer, & Bolen, 1988; Bolen & Rogers, 1988; Rogers, Bolen, & Palmer, 1988). These studies reported the results of testing the entire (N = 480) freshman class of 1986-87 (Rogers & Palmer, 1987), and a cross-sectional study that compared those freshmen results with a volunteer sample of seniors (N = 131) graduating in 1987 (Rogers, Palmer, & Bolen, 1988; Rogers, Bolen, & Palmer, 1988). Seniors scored significantly higher on learning orientation (LO mean = 52.7) than did freshmen (LO mean = 50.2). This pattern was reversed on grade orientation, with seniors scoring significantly lower (GO mean = 42.0) than freshmen (GO mean = 44.1). Because of the cross-sectional nature of this research and because the senior group consisted of volunteers, results of these studies did not necessarily indicate actual changes in learning and grade orientation over the college years. The differences could be due to attrition, cohort differences, volunteer effects, or other factors.

The mean LO scores of students in the cross-sectional study (Rogers, Palmer, & Bolen, 1988; Rogers, Bolen, & Palmer, 1988) were higher than those found in most earlier research with LOGO II. Table 1 summarizes the means from this study and earlier studies (Eison & Pollio, 1990).

Table 1

Mean Orientation Scores for Samples from Several Schools

Source	Mean LO	Mean GO
University of Montevallo SR	52.73	42.02
University of Montevallo FR	50.18	44.01
University of West Florida	49.89	43.78
Western Carolina University	49.10	45.60
Sinclair Community College	49.02	41.76
Southeastern Massachusetts Univ.	47.75	43.26
University of Tennessee, Martin	47.43	45.90
Southeast Missouri State Univ. (1)	47.32	42.43
Southeast Missouri State Univ. (2)	47.31	47.08
Appalachian State University	47.22	44.91
California State Univ., Fullerton	46.50	43.94
Bentley College	44.66	45.75

Note. Adapted from LOGO II: Bibliographic and Statistical Update, p. 27, by J. A. Eison and H. Pollio, 1990, Authors. Adapted with permission.

LO = Learning Orientation, GO = Grade Orientation.

It is particularly interesting that the University of Montevallo seniors in the cross-sectional study had the highest LO mean of any group, and the next to lowest GO mean of any group. The senior LO mean was even higher than the LO mean of 51.7 reported for honors students at Southeast Missouri (Stephens and Eison, 1986-87, p. 21). One possible interpretation of this is that perhaps volunteer samples are more learning and less grade oriented than non-volunteers. However, the University of Montevallo freshmen had the second highest LO mean and a moderate GO mean, and they comprised a totally non-volunteer sample.

Context and Methods

The present study addresses three research questions:

1. Do learning orientation (LO) and/or grade orientation (GO) change from the freshman year to the senior year, possibly reflecting an effect of general education or of specific majors on students' attitudes toward lifelong learning?
2. Do students majoring in different areas differ in their LO and/or GO scores?
3. Is there a differential change in LO and/or GO scores from freshman to senior year for students majoring in different areas, possibly indicating differential effects of course work or other experiences in the major fields on attitudes toward learning, grades, and/or lifelong learning?

If LO and GO do change from freshman year to senior year, this might be due to educational effects or to the effects of maturation or other historical factors not directly related to education. However, if there are differential effects of change for different majors, this would support the educational-effects interpretation. If LO and GO do not change, this

could be interpreted as support for the conception of these as relatively stable traits relating to learning styles of students, or at least as evidence that this instrument is not sensitive to changes in attitudes about lifelong learning.

The University of Montevallo, which has a strong state-directed liberal education mission, implemented a core curriculum in 1985 after eight years of goal definition and program development (University of Montevallo, 1978, 1983). One of these goals is the development of habits of independent inquiry that can lead to lifelong learning. All students at the University of Montevallo are required to participate in freshman (since 1985) and senior (since 1989) assessments. Some freshmen who do not take the assessments during registration and who drop out before completing their freshman year or who plan to transfer to another school may not be included in the assessment program. Likewise, a few seniors may be excused from senior assessments due to personal circumstances. Seniors who do not take the assessments (and who are not excused) are not allowed to participate in graduation exercises; therefore, compliance usually exceeds 98%. However, privacy privileges allow students not to answer questions on the assessments if they choose, which results in a few unusable instruments for both freshmen and seniors.

Subjects for the present study were students who entered the University of Montevallo as freshmen in 1986-7 academic year. Only those students who participated in both freshman and senior testing and who completed their academic work at UM in 4 to 5 years (between fall of 1989 and summer of 1991) were included in the analysis ($N = 174$). This constitutes approximately 36% of the original freshman group.

LOGO II was administered to all freshmen (N=483) entering University of Montevallo in the 1986-87 academic year. As part of their freshman assessment requirement, these students took the ACT COMP test and LOGO II at the beginning of their freshman year. Seniors graduating in fall of 1989 through summer of 1991 also took LOGO II as part of their senior assessment requirement, which also included the ACT COMP test and a locally developed Senior Survey that asked about their satisfactions with nearly all aspects of their academic experience at UM. Students were encouraged to participate thoughtfully and honestly, since all of the assessment activities were designed to help the university improve its programs. Only data from LOGO II are discussed in this study.

Data Analysis

Although information on majors was available for both freshmen and seniors, because of the instability of majors at the beginning of the freshman year, the major each student had at the time of graduation was used to determine the appropriate major area classification. To provide larger Ns for analysis by majors, some of these majors were combined into logically related groups.

Except where noted, SAS® (SAS, 1990) and SAS/STAT®[1] (SAS, 1989) Version 6.06, were used for all statistical procedures. Data were analyzed with a repeated measures analyses of variance using the SAS/STAT® GLM procedure (SAS, 1989, v. 2).

Results

Means of learning and grade orientation scores at the freshman and senior levels are shown in Table 2.

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Table 2

Freshman and Senior Means and Standard Deviations, LO and GO

N = 174

Variable	Mean	SD
FRLO	50.36	6.162
SRLO	51.02	7.033
FRGO	44.04	6.355
SRGO	45.70	7.822

The means for LO and GO scores at freshman and senior levels for different majors are shown in Table 3. There was no significant interaction between class (time-of-testing) and major area on learning orientation scores. Figure 1 shows the rather flat pattern of freshman to senior scores for most majors. Changes in learning orientation from freshman to senior year do not appear to be reliably different for students in the various major areas. There was no significant main effect of class on learning orientation (no overall change from freshman to senior year), but there was a significant effect ($p < .01$) for major. Majors differed in their average LO scores. English, psychology and fine arts majors had high learning orientation scores at both the freshman and senior levels, while communication science and disorders, and business majors had relatively low learning orientation scores.

Table 3

Means and Standard Deviations of LO and GO by Major

		FRLO		SRLO		FRGO		SRGO	
Major Area	N	M	SD	M	SD	M	SD	M	SD
Business	44	48.5	6.26	48.1	6.43	44.7	5.94	47.2	7.58
Sciences	5	51.2	6.10	52.0	4.95	40.0	2.35	39.6	4.72
Home Ec	8	50.8	5.20	49.6	6.14	42.9	4.16	51.1	4.02
Mass Comm	10	50.9	3.81	50.1	5.86	44.9	4.33	46.2	6.14
Psychology	10	52.0	5.37	57.4	8.04	39.1	6.77	40.0	8.67
Fine Arts	14	53.1	5.55	53.7	4.76	43.5	4.83	41.1	5.36
Education	35	48.9	5.91	51.2	6.48	45.6	7.37	46.6	7.01
CSD	9	47.1	5.88	50.0	5.34	46.9	7.57	51.1	5.28
Soc Sci	13	51.4	6.97	50.3	8.82	44.8	7.00	42.2	8.30
Eng/For Lang	26	53.5	6.24	53.2	8.00	42.4	6.14	46.0	9.40

FRLO - Freshman Learning Orientation SRLO - Senior Learning Orientation

FRGO - Freshman Grade Orientation SRGO - Senior Grade Orientation

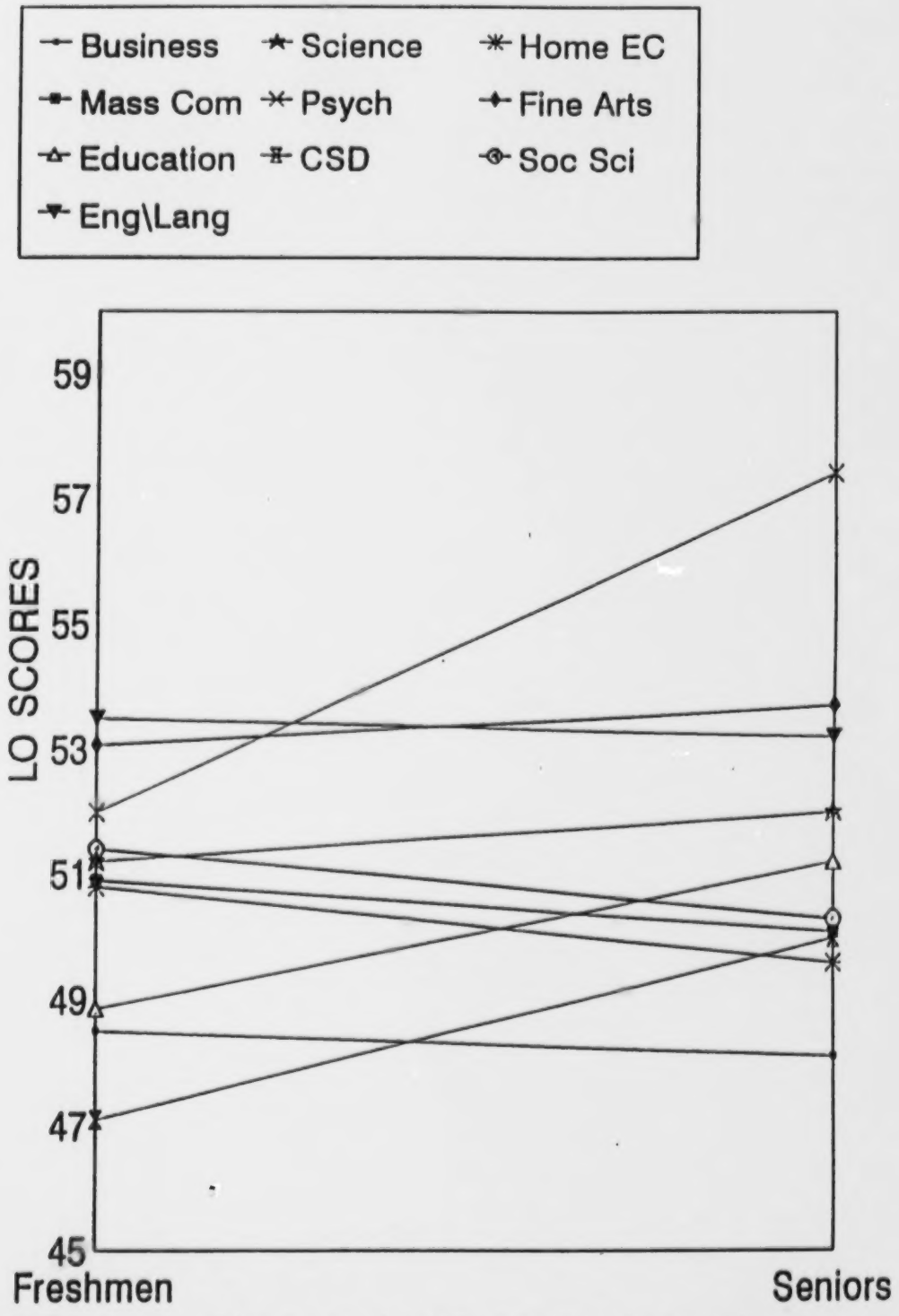

Figure 1. Changes in LO scores by major

For grade orientation, there was a significant interaction between major and class level. Figure 2 shows that some majors (communications sciences and disorders, home economics, and English) increased substantially in grade orientation scores from freshman to senior year, that some other majors (social sciences and fine arts) decreased in GO scores, and still other majors remained relatively stable or showed only minimal gains. Psychology and science majors, for example, started low in grade orientation and remained that way as seniors.

Since there was an interaction between gains in GO scores and majors, there can be no simple interpretation of the significant main effects of grade level (grade orientation gain from freshman to senior year, $p < .05$) or of major ($p < .01$). There was a significant overall increase in GO scores, but there are clearly different patterns of change in GO scores for different majors, with some majors actually decreasing their GO scores from freshman to senior years, counter to the overall trend.

Discussion

Results of this study do not indicate an increase in learning orientation over the college years, at least as far as this student population is concerned. It is curious that the earlier cross-sectional study (Rogers, et al, 1988) did show seniors with higher learning orientation scores than freshmen. This could well have been because that senior group was a volunteer sample, and students who are willing to spend several hours taking tests and surveys when they could get out of doing so are most likely ones who are highly interested in learning for learning's sake. This should serve as a caution to researchers using volunteer

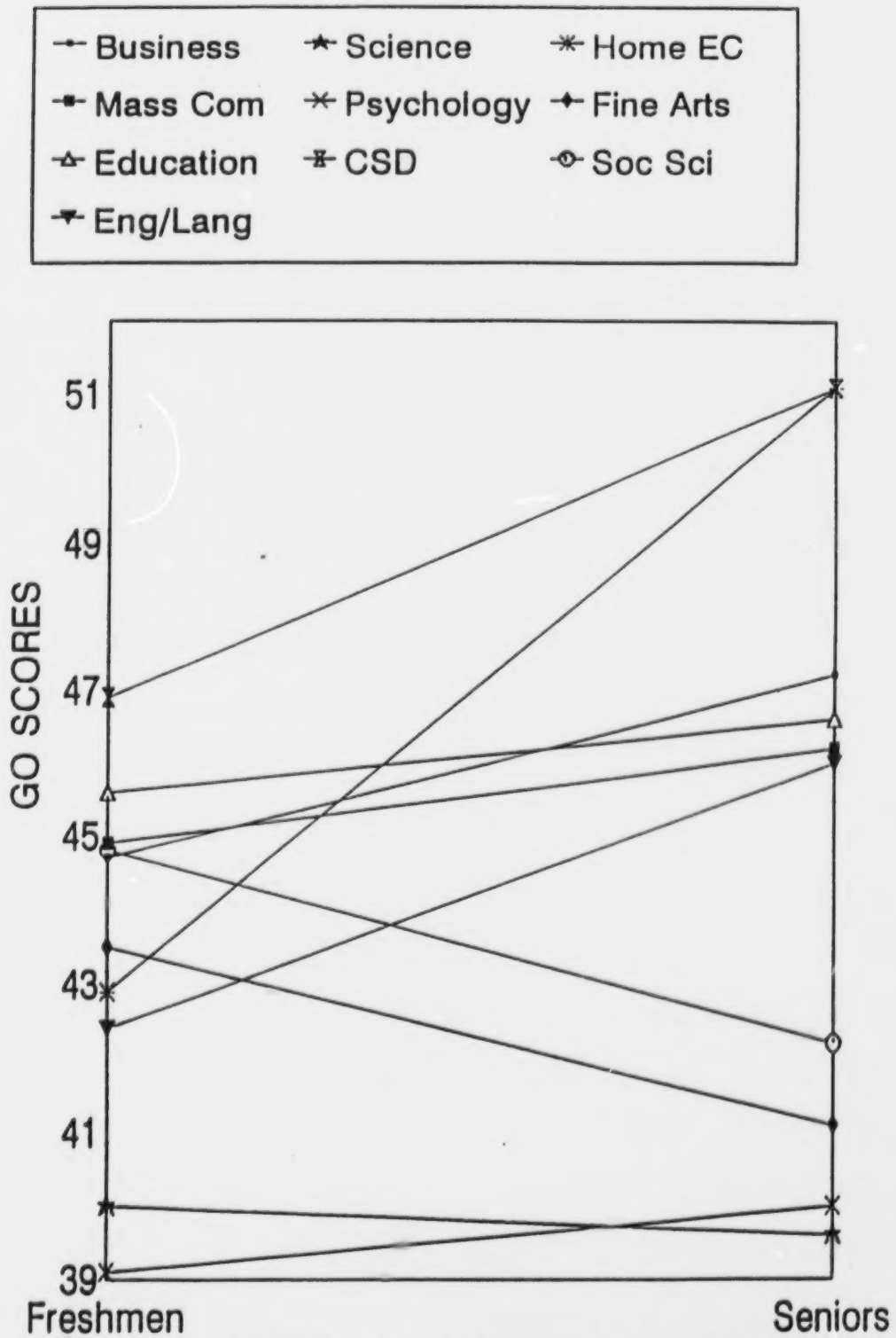

Figure 2. Changes in GO scores by major

samples for studying college outcomes, that such samples probably differ from students in general in some very crucial ways.

Although this student cohort did not increase in learning orientation over the college years, these students came into college as freshmen with the highest LO mean (50.4) of any group previously tested except for the volunteer cross-sectional seniors (52.7) noted above. Similarly, their mean LO scores as seniors were only slightly lower than those of the earlier volunteer seniors. It may be simply that these students, for whatever reason, came into college motivated to learn for the joy of it, and remained that way during their college careers. There is no indication that students with either high or low scores on learning orientation tend to drop out of college. The freshman LO mean for the group that persisted was 50.4 compared to the LO mean of 50.2 for the full group of freshmen.

It is interesting to note that, although LO scores did not change significantly during these students' college years, those who were learning oriented to start with tended to choose certain majors over others, and those who were low on learning orientation likewise tended to gravitate toward certain majors. Implications of this should be pursued in later research.

The significant increase in grade orientation across the college years, particularly in the absence of an increase in learning orientation, also raises questions about the effect of college (at least this particular college) on students attitudes toward lifelong learning. Although there is certainly some virtue for students in valuing grades up to a point, most faculty would not want to think they are encouraging students to rely on the extrinsic motivation of grades to encourage learning.

One possibility is that the findings of increased grade orientation resulted from fluctuations in attitudes toward learning and grades over the semester. Eison (1981) found differences in grade orientation and learning orientation from early in the semester to late in the semester, with students becoming more grade and less learning oriented as the semester progressed. This study was done, however, with the original LOGO instrument developed by Eison (1981), not LOGO II. This instrument was constructed so that high scores on one orientation automatically caused low ones in the other. Furthermore, that study was not longitudinal, but rather done with different introductory psychology classes at different times in the semester. It is not certain that the same individuals actually increased in grade orientation over the semester. Although the present study did test most freshmen at the very beginning of the semester, some were tested at varying times later in the term when make-up sessions were given. Seniors tended to be tested near the middle or latter half of the semester, though usually not very close to final exam time. There is no way to be certain that time of semester was not a factor in the results of this study, but the fact that different majors showed different patterns of change, and the fact that students in each class level were tested at varying times in the semester, would tend to discount the time-of-semester explanation.

Another possible explanation for the increase in grade orientation could be that students with high grade orientation tend to persist in college more than those with less grade orientation. Eison (1981) discussed that possibility in connection with the changes found in learning and grade orientation over the semester, discussed in the previous paragraph. He concluded that there was no empirical or intuitive basis to suspect that learning oriented

students were more likely to drop out and grade oriented students more likely to persist. In the current study, the freshman GO mean (those who persisted) was 44.04, compared to the mean GO for the entire freshman class of 44.01. This does not support a selective attrition explanation.

The finding that students with different majors change their grade orientation scores in different ways is provocative. Do some faculties encourage grade orientation? Do they intend doing so, or is it simply a by-product of the way they teach, or the way their discipline is structured, or of the job market or graduate schools focusing on excellent grades? Milton et al. (1986) suggested that grading practices, types of assignments, and faculty attitudes might foster grade orientation over learning orientation. The effect of college majors on both learning and grade orientation could be a fruitful direction for further research.

This study did not look at a wide variety of other factors that might have influenced the changes in GO or the differences in both LO and GO. Such factors include influences of student housing and extracurricular activities, influences of parental education and occupational levels, possible cohort effects that were particular to this group of students, and gender differences. Using majors to disaggregate the data is only one approach to looking at differential effects of college on learning and grade orientation. Future studies should explore some of these other possibilities.

Since learning orientation scores did not increase over the college years in this study, there is no clear support for using LOGO II as an indicator of increases in attitudes or skills for lifelong learning. The failure to find changes, however, may be due to this group of

students, who started high on LO as freshmen, or this particular educational program not emphasizing lifelong learning attitudes. The general education goals at this school certainly purport to encourage these attitudes, however. Researchers wishing to measure this potential outcome of general education might try LOGO II with other populations, but would also be advised to look for other alternative measures of this goal.

Summary

Although LOGO II did not show an increase in learning orientation from freshman to senior year for this sample, it did identify interesting differences in learning orientation for different majors, suggesting that students may self-select into majors that reflect their own attitudes toward learning. The GO scale revealed an interaction between major area and changes in grade orientation, with students in some majors showing substantial increases in GO and those in other majors showing decreases or staying the same. Further research could profitably investigate these relationships between majors and learning and grade orientation, as well as exploring the effect of a variety of other factors on these attitudes.

LOGO II does not appear to be a promising tool for measuring the general education goal of lifelong learning, but it does seem to be a stable research instrument for investigating a number of other aspects of college students' attitudes and behaviors.

AUTHOR'S NOTES

This paper is based on the author's 1992 doctoral dissertation at the University of Alabama, A Comparison of approaches to measurement of change in learning and grade orientation of college students.

Permission to use LOGO II in this research was obtained from James A. Eison. For additional information on the LOGO II scale or permission to use it as a research instrument, contact James A. Eison, PhD, Director, Center for Teaching Enhancement, University of South Florida, Tampa, FL. Permission to use LOGO II is given only to researchers who report their findings to the authors (Eison or Pollio).

REFERENCES

Banta, T. W. (Ed.). (1988). Implementing outcomes assessment: Promise and perils. New Directions for Institutional Research, No.59. San Francisco: Jossey-Bass.

Bolen, L. E., & Rogers, J. S. (1988, April). Learning and grade orientation: A profile of college seniors. Paper presented at the Third Southeastern Psychology Undergraduate Research Conference, Montevallo, AL.

Eison, J. A. (1981). A new instrument for assessing students' orientations towards grades and learning. Psychological Reports. 48, 919-924.

Eison, J. A. (1982). Educational and personal dimensions of learning- and grade-oriented students. Psychological Reports. 51, 867-870.

Eison, J. A. (undated). Recognizing and responding to learning style differences. Cape Girardeau, MO: Center for Teaching and Learning.

Eison, J. A., & Pollio, H. (1985). A multidimensional approach to the definition of college students' learning styles. Journal of College Student Personnel, 27, 434-443.

Eison, J. A., & Pollio, H. (1990). LOGO II: Bibliographic and statistical update. Authors.

Eison, J. A., Pollio, H., & Milton, O. (1982). Manual for use with LOGO II. Knoxville, TN: Learning Research Center, University of Tennessee.

Eison, J. A., Pollio, H., & Milton, O. (1986). Educational and personal characteristics of four different types of learning- and grade-oriented students. Contemporary Educational Psychology, 11, 54-67.

Ewell, P. (1985). The value-added debate . . . continued. AAHE Bulletin, 38, 12-13.

Ewell, P. T. (1988). Outcomes, assessment, and academic improvement: In search of usable knowledge. In J. C. Smart (Ed.), Higher education: Handbook of theory and research, Vol. II (pp. 53-108). New York: Agathon.

Harris, C. M., & Couch, J. V. (1989). Construct validity of the LOGO II Scale. Unpublished manuscript, Department of Psychology, James Madison University, Harrisonburg, VA.

Jacobi, M., Astin, A., & Ayala, F. (1987). College student outcomes assessment: A talent development perspective. ASHE-ERIC Higher Education Report Nol 7. Washington, DC: Association for the Study of Higher Education.

Milton, O., Pollio, H. R., & Eison, J. A. (1986). Making sense of college grades. San Francisco: Jossey-Bass.

Northeast Missouri State University. (1984). In pursuit of degrees with integrity: A value added approach to undergraduate assessment. Washington, D. C.: American Association of State Colleges and Universities.

Rogers, J. S. (1992). A comparison of approaches to measurement of change in learning and grade orientation of college students. (Doctoral dissertation, University of Alabama, 1992).

Rogers, J. S., Bolen, L. E., & Palmer, W. R. (1988, November). Learning and grade orientation: How freshmen and seniors differ. Paper presented at the annual meeting of the Mid-South Educational Research Association, Louisville, KY.

Rogers, J. S., & Palmer, W. R. (1987, November). Learning and grade orientation: Profile of a college freshman class. Paper presented at the annual meeting of the Mid-South Educational Research Association, Mobile, AL.

Rogers, J. S., Palmer, W. R., and Bolen, L. E. (1988, March). In pursuit of lifelong learning: A comparison of learning and grade orientation of freshmen and seniors. Paper presented at the annual meeting of the Southeastern Psychological Association, New Orleans, LA.

SAS Institute Inc. (1990). SAS® procedures guide, Version 6, Fourth edition. Cary, NC: Author.

SAS Institute Inc. (1989). SAS/STAT® user's guide, Version 6, Fourth edition (Vols. 1 & 2). Cary, NC: Author.

Stephens, J., & Eison, J. A. (1986-87). A comparative investigation of honors and non-honors students. Forum for Honors, 17, 1-2.

University of Montevallo. (1978). The next decade: A focus on quality. Mission and goals of the University of Montevallo. Montevallo, AL: Author.

University of Montevallo. (1983). A proposal to University of Montevallo faculty of a revised core educational program. Montevallo, AL: Author.